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The relationship between physical activity and self-esteem among Turkish university students: a gender perspective; a multidisciplinary and multi-center study

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ABSTRACT

Aims: The current study aimed to examine the associations between physical exercise and self-esteem as well as other social-cognitive variables including self-efficacy and body image among Turkish university students.

Methods: Sociodemographic Information Form, short form of the International Physical Activity Questionnaire, Rosenberg Self-Esteem Scale, Body Cathexis Scale, and General Self-Efficacy Scale were administered to 1167 students.

Results: There were significant gender differences in total, vigorous, moderate activity, and walking scores as well as body image scores in favor of male participants; while female participants had significantly higher self-efficacy scores. There were significant differences between sedentary, active, and very active participants in terms of self-esteem, and body image and between all groups in terms of self-efficacy. Also, there were significant and positive correlations between physical activity and self-esteem, and between body image and self-efficacy in university students.

Conclusion: Level of physical activity increased with age. This increased level of physical activity showed positive correlations with self-esteem, body image, and self-efficacy.

Keywords: Gender, student, body image, exercise, self-efficacy

INTRODUCTION

Physical activity and exercise improve various elements of well-being. Regular physical activity restores body composition; improves lipid-lipoprotein profile; regulates glycose balance and insulin sensitivity; decreases blood pressure, systemic inflammation and coagulation; and regulates coronary blood flow and cardiac functions. Regular physical activity is also associated with psychological well-being. Decreased levels of anxiety, stress, and depression are important for preventing cardiovascular diseases and treating chronic diseases such as diabetes, cancer, and hypertension by positively affecting mental health.[1]

Self-esteem is regarded as an important indicator of mental health. According to Rosenberg,[2] self-esteem is a favorable or unfavorable attitude toward the self. Self-esteem is an important aspect of psychological well-being and includes emotional and evaluative components of one's self-concept. Increased self-esteem leads to feelings of worthiness and strength.[3] Low self-esteem is related to negative health behaviors including lack of exercise.[4] According to the authors, participation in physical exercise leads to an increase in self-esteem regardless of the type of physical activity. Today, many researchers think that self-esteem is a variable that has the potential of reflecting the psychological benefits of regular exercise.[5] Previous research provided support for this model by demonstrating that self-esteem and exercise are positively associated. Other studies also suggested that regular physical activity positively affects self-esteem among male and female university students.[3,5] High perceived stress reduces cognitive functioning in students, especially during exam times, stress levels increase considerably. Physical activity positively affects both cognitive performance and mental health. Thus, the learning and academic

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success of university students increases.[6] On the other hand, Hubbs et al.[7] found a significant correlation between perceived stress and self-esteem but could not determine a significant relationship between self-esteem and physical activity.

According to Bandura, self-efficacy is one's judgment regarding one's capability to organize and perform certain acts that are needed to achieve designated types of performances.[8] High self-efficacy motivates performing behavior and is effective in achieving such behavior with satisfactory results.[9] In another study, self-efficacy was found to contribute to the level of physical activity in an adult sample, however, its effect size was found to be small.[10]

The term "body image" corresponds to body-related self-perceptions and attitudes. Women tend to have more negative body image and their self-esteem is more significantly related to body image compared to men.[11] Body image is linked to self-esteem and exercise behaviors.[12]

In our large population study, the relationship between self-esteem, self-efficacy, body image, and physical activity level was investigated. It was hypothesized that physical activity is positively associated with self-esteem, self-efficacy, and body image.

METHODS

This study was performed in Turkiye as a cross-sectional, multi-centered, and multidisciplinary study. The study was conducted with 1167 students from four different universities. The inclusion criteria for this study were being a university student between 18-30 years of age. The exclusion criteria were having a orthopedic, neurological, psychiatric or systemic disease, being pregnant, having a BMI over 29.9 kg/m², being in psychiatric treatment and refusing to participate in the study.

Prior to conducting the study, ethical permissions were obtained from İzmir University Faculty of Medicine Non-invasive Researches Ethics Committee (Date: 17.12.2015 Decision No: 2015/49). The paper was held according to the Helsinki Declaration. The students were informed about the study aim and they signed informed consent forms. Participation in the study was voluntary. A sociodemographic information form; which included questions about age, gender, height, weight, body mass index (BMI), education, and employment status; the International Physical Activity Questionnaire, the Rosenberg Self-Esteem Scale, the Body Cathexis Scale, and the General Self Efficacy Scale were administered to the students in a classroom setting by the researchers.

Instruments

International physical activity questionnaire: The physical activity levels of the participants were measured by the short form of the International Physical Activity Questionnaire (IPAQ). This short form consists of seven questions and provides information about the time spent sitting, walking, and engaging in moderately intense activity and vigorous activities during the last seven days. The total score of the short form is calculated as the sum of data obtained multiplied by the activity type coefficient, duration of the activity, and the number of days that the activity had been performed. In the evaluation of all activities, performing each activity for at least 10 minutes at one time was taken into consideration. A score of "MET-minute/ week" is obtained by multiplying minutes, days, and MET (folds resting oxygen consumption). In the calculation of the walking score, the duration of walking (minutes) was multiplied by 3.3 METs. Four METs for moderately intense activity and 8 METs for vigorous activity were used in the calculation. The levels of physical activity were classified as not being physically active (<600 MET-min/week), low level of physical activity (600-3000 MET-min/week), and adequate level of physical activity (beneficial for health) (>3000 MET-min/week).[13]

Rosenberg self-esteem scale: Rosenberg Self-Esteem Scale examines the level of self-esteem both in medical patients and healthy individuals. The scale was developed by Rosenberg in 1965. It is a Likert-type scale including 10 items with responses ranging from 0 (strongly agree) to 3 (strongly disagree). Higher scores indicate higher levels of self-esteem. The validity and reliability of the Rosenberg Self-esteem Scale were shown in different ethnic groups. The Turkish validity and reliability study of the scale was conducted in 1985 by Cuhadaroglu.[14]

Body cathexis scale: The Body Cathexis Scale (BCS), evaluates the level of body image satisfaction. BCS assesses how individuals perceive all body parts in detail. The scale has 40 items. Each item describes a body part (such as arms, legs, or face). Responses are expressed as "I do not like it at all-I do not like it-Neutral-I like it -I like it so much". Each item is given a score between 1-5 points. A total score of 40-200 points can be obtained and higher scores indicate an increase in the positive direction. The Cronbach's alpha internal consistency coefficient of the scale was found to be 0.91 ($p<0.01$) in the Turkish adaptation study, which was conducted by Hovardaoglu in 1990.[15]

The general self-efficacy scale: The General Self-Efficacy Scale (GSE) is a 4-point Likert type scale including 10 items. Total scores range from 10 to 40. The validity and reliability study of the Turkish version of the GSE was conducted by Aypay.[16]

Statistical Analysis

Data were analyzed using the SPSS 21.0 software. Continuous variables were expressed as mean±standard deviation and categorical variables as number and percent. Kruskal Wallis Variance Analysis was used to compare independent groups. For post-hoc analysis, the Mann-Whitney U test with Bonferroni Correction was used when the Kruskal Wallis test indicated significant differences between groups. The Spearman Correlation Coefficient was used for determining the correlation between continuous variables. Linear regression analysis was used to analyze the factors that had an effect on the Rosenberg Self-Esteem scale, Body Cathexis Scale and General Perceived Self-Efficacy Scale scores, which were examined as the dependent variable.

RESULTS

A total of 1235 participants were included in this study. However, 68 of them were excluded due to missing data, and the analysis was completed with 1167 participants. Thirty-three of these 68 excluded participants were because of obesity. Data obtained from participants whose BMI was 29.9 kg/m² were excluded from the sample since obesity may have negative effects on physical activity levels and self-esteem. The BMI of our participants was found to be between 20.00-29.99 kg/m² , which is accepted as normal or overweight. This situation may be considered as a limitation of our study.The demographic characteristics of the participants were provided in **Table 1**. In order to analyze the difference between groups, the participants were defined as sedentary (0-600), active (601-3000), and very active (≥3001) according to the results of the IPAQ (**Table 1**).

When the differences according to the genders are examined; In all physical activity examinations, male participants levels were found to be significantly higher than female participants. Rosenberg values did not show statistically significant difference according to gender. Body Cathexis Scale values were found to be significantly higher in male participants according to female participants and General Perceived Self-Efficacy Scale values were found to be significantly higher in female participants according to male participants (**Table 2**).

Considering the results of Kruskal Wallis Analysis of Variance, which was conducted to examine the differences between physical activity level groups; for Rosenberg Self-Esteem Scale and Body Cathexis Scale values, it was observed that the values of the participants with Sedentary and active groups were significantly lower than very active group. In the General Perceived Self-Efficacy Scale, the values of the participants with Sedentary and active groups were significantly lower than very active group, moreover sedentary group have significantly lower values than active group (**Table 3**).

Table 1. Demographic characteristics and activity levels of the participants

Variable	N	% ratio
Gender; female	722	61.9
Male	445	38.1
Marital status; single	1155	99
Married	12	1
	mean±SD	
Age (years)	21.11±1.91	
BMI (kg/m2)	22.78±5.45	
Cigarette use number/day (n=206)	12.64±7.95	
Years of cigarette smoking (n=169)	4.19±3.17	
Groups	**N**	**%**
Sedentary (0-600)	241	24.2
Active (601-3000)	513	51,6
Very active (≥3001)	241	24.2

Mean±SD: Mean±Standard Deviation

Table 2. Physical activity levels of of the study participants according to the gender

	Total	Female	Male	P
	mean±SD	mean±SD	mean±SD	
Vigorous physical activity	669.18±1709.67	510.98±69.25	1189.81±98.60	<0.0001*
Moderate intensity physical activity	283.39±1045.70	255.53±25.90	435.67±82.15	<0.0001*
Walking	1115.71±1873.97	1197.91±92.12	1306.65±72.76	0.007*
IPAQ-total	2068.28±3042.11	1964.43±126.22	2932.15±166.10	<0.0001*
Rosenberg self-esteem scale	21.53±5.14	21.61±0.21	21.34±0.26	0.387
Body cathexis scale	150.06±21.06	148.48±0.84	154.70±0.95	<0.0001*
General perceived self-efficacy scale	28.20±5.54	62.16±1.57	46.87±2.07	<0.0001*

*p<0.05 statistically significant; Mean±SD: Mean±Standard Deviation; Mann Whitney U test

Table 3. Self-esteem levels of the participants according to the physical activity levels

Variable	Sedentary	Active	Very active	P
	mean±SD	mean±SD	mean±SD	
Rosenberg Self-Esteem Scale	21.23±5.15	21.11±5.23	22.93±4.68	<0.0001*bc
Body Cathexis Scale	147.62±22.57	148.72±20.26	156.84±19.18	<0.0001*bc
General Perceived Self-Efficacy Scale	26.99±5.27	28.29±5.69	29.79±5.20	<0.0001*abc

*p<0.05 statistically significant; Mean±SD: Mean±Standard Deviation; Kruskal Wallis Variance Analysis; a: Statistically significant difference between Sedentary and Active; b: Statistically significant difference between Sedentary and Very Active; c: Statistically significant difference between Active and Very Active

All differences in self-esteem, body image, and self-efficacy parameters were derived from the active and very active groups, and from the sedentary and very active groups.

In order to test the correlation between physical activity and self–esteem, Spearman's correlation analysis was conducted. According to the results, there were significant and positive correlations between IPAQ total scores and self-esteem, body image, and self-efficacy. On the other hand, vigorous physical activity had significant and positive correlations with body image and self-efficacy. Moderate physical activity had significant and positive correlations with Self-Esteem Scale and self-efficacy. Also, walking scores had significant and positive correlations with self-esteem, body image, and self-efficacy (**Table 4**).

Moreover, the relationships between physical activity and psychological variables were examined based on gender. In female participants, vigorous exercise was significantly and positively associated with body image and self-efficacy; whereas moderate exercise was significantly and positively related to body image. In addition, walking scores were significantly and positively associated with body image and self-efficacy; while the IPAQ total scores were significantly and positively correlated with body image and self-efficacy (**Table 4**).

The relationships between physical activity and psychological variables were also examined in male participants. Vigorous activity significantly and positively correlated with GSE. Moderate activity significantly and positively correlated with self-esteem and self-efficacy; while walking scores were significantly associated with self-esteem and GSE. Finally, the IPAQ total scores were significantly and positively correlated with self-esteem and GSE (**Table 4**).

When examining the factors affecting scale scores, it was observed that moderate intensity physical activity values and total physical activity values have statistically significant and enhancing effects on Rosenberg scale scores. Additionally, body mass index (BMI) and years of smoking were found to have statistically significant and decreasing effects on Rosenberg scores. It was observed that high intensity physical activity values, walking activity values, total physical activity values, and male gender have statistically significant and enhancing effects on BİÖ scale scores. It was observed that high intensity physical activity values, moderate intensity physical activity values, walking activity values, total physical activity values, and the number of cigarettes smoked per day have statistically significant and enhancing effects on GAÖÖ scale scores (**Table 5**).

Table 4: Correlations between physical activity and self-esteem, body image, and self-efficacy

		Rosenberg Self-Esteem Scale_Total	Body Cathexis Scale_Total	General Perceived Self-Efficacy Scale_Total
Overall				
Vigorous physical activity	r	0.036	0.110*	0.117*
	p	0.246	0.000	0.000
Moderate intensity physical activity	r	0.096*	0.056	0.126*
	p	0.002	0.074	0.000
Walking	r	0.083*	0.118*	0.149*
	p	0.006	0.000	0.000
IPAQ-total	r	0.079*	0.161*	0.197*
	p	0.007	0.000	0.000
Female participants				
Vigorous physical activity	r	0.007	0.099*	0.083*
	p	0.862	0.012	0.035
Moderate intensity physical activity	r	0.053	0.104*	0.063
	p	0.183	0.009	0.117
Walking	r	0.066	0.143*	0.125*
	p	0.083	0.000	0.001
IPAQ-total	r	0.030	0.174*	0.172*
	p	0.421	0.000	0.000
male participants				
Vigorous physical activity	r	0.089	0.036	0.133*
	p	0.070	0.473	0.007
Moderate intensity physical activity	r	0.168*	-0.055	0.208*
	p	0.001	0.275	0.000
Walking	r	0.112*	0.041	0.183*
	p	0.022	0.399	0.000
IPAQ-total	r	0.164*	0.069	0.215*
	p	0.001	0.148	0.000

*p<0.05 statistically significant correlation; r: Spearman Correlation Coefficient

Table 5.

Dependent/ Independent	Std. Beta	t	p	95% C.I Lower	95% C.I upper
Rosenberg Self-Esteem Scale_Total					
IPAQ_vigorous	0.044	1.433	0.152	0.000	0.000
IPAQ_moderate	0.081	2.602	0.009*	0.000	0.001
IPAQ_walking	0.049	1.625	0.105	0.000	0.000
IPAQ_total	0.077	2.648	0.008*	0.000	0.000
BMI	-0.133	-4.594	0.0001*	-0.18	-0.072
Gender	-0.025	-0.841	0.401	-0.869	0.348
Marital status	-0.042	-1.428	0.154	-5.058	0.797
Cigarette number/day	0.051	0.727	0.468	-0.058	0.125
Cigarette-year	-0.16	-2.095	0.038*	-0.533	-0.016
Body Cathexis Scale_Total					
IPAQ_vigorous	0.132	4.314	0.0001*	0.001	0.002
IPAQ_moderate	0.058	1.859	0.063	0.000	0.002
IPAQ_walking	0.063	2.097	0.036*	0.000	0.001
IPAQ_total	0.134	4.604	0.0001*	0.001	0.001
BMI	-0.016	-0.535	0.593	-0.283	0.162
Gender	0.158	5.468	0.0001*	4.397	9.318
Marital status	0.05	1.697	0.09	-1.621	22.347
Cigarette number/day	0.114	1.643	0.102	-0.068	0.746
Cigarette-year	0.1	1.295	0.197	-0.383	1.841
General Perceived Self-Efficacy Scale_Total					
IPAQ_vigorous	0.115	3.753	0.0001*	0.000	0.001
IPAQ_moderate	0.092	2.956	0.003*	0.000	0.001
IPAQ_walking	0.074	2.459	0.014*	0.000	0.000
IPAQ_total	0.151	5.214	0.0001*	0.000	0.000
BMI	-0.025	-0.855	0.393	-0.084	0.033
Gender	0.049	1.673	0.095	-0.097	1.214
Marital status	0.049	1.664	0.096	-0.479	5.82
Cigarette number/day	0.181	2.63	0.009*	0.036	0.249
Cigarette-year	0.043	0.556	0.579	-0.222	0.395

*p<0.05 statistically significant; Std. Beta: Standardized Beta Coefficient; 95% C.I: 95% Confidence Interval; Linear Regression Analysis

DISCUSSION

The aim of this study is to examine the relationship between self-esteem, self-efficacy, body image and physical activity level. We sought to determine the existence of significant differences between the means of the physically active and non-exercising groups, for the variables body image, self-esteem and self-efficacy. In the current study, the relationships between physical activity level and self-esteem, self-efficacy, and body image were assessed, and while highly significant relationships between total physical activity score and body image and self-efficacy were found, there was no relationship between physical activity and self-esteem in female participants.

The comparative report of the World Health Organization showed that 54.6% of the population aged above 15 years was insufficiently active. In the current study, 1167 university students with a mean age of 21.10±0.05 and an average BMI value of 22.78±5.45 were assessed. In the evaluation of physical activity levels, it was found that 20.7% of the students were sedentary, 44% were active and 20.7% were very active. In the present study, participants with a normal BMI were included, therefore the physical activity level of the sample was deemed satisfactory. In the groups which had been classified according to the level of physical activity, mean ages were 20.61±0.09 in the sedentary group, 21.31±0.08 in the active group, and 21.36±0.11 in the very active group. As the ages of the participants increased, the level of physical activity also raised. This raise may be linked to the fact that health-related awareness improves with age. This increased level of physical activity showed positive correlations with self-esteem, body image, and self-efficacy.

In a study investigating self-efficacy in participants doing regular sports and those not doing regular sports activities, it was reported that female university students doing regular sports had higher levels of positive self-perception.[17] In the current study, self-esteem also significantly increased with higher levels of physical activity.

Hubbs et al.[7] assessed the perceived stress, self-esteem, and physical activity levels among university students ≥18 years old and found that there was a significant correlation between perceived stress and self-esteem but the level of physical activity did not have any relationship with these two variables. According to the literature, the association between physical exercise and self-esteem is particularly significant in people with low self-esteem. The reason for not being able to find a significant association between exercise and self-esteem may be that the female participants in the present study had moderate levels of self-esteem. In addition, the difference between female and male students regarding the relationship between self-esteem and physical exercise may be due to their reasons for exercise. Women tend to engage in exercise to achieve weight control and attractiveness compared to men, who exercise for health-related purposes. Exercising for health-related outcomes was linked to increased self-esteem, whereas exercising for weight control was not related to self-esteem.[18] We found significant relationships between exercise and self-esteem across the whole sample and male participants. This finding is in line with previous research.[3]

Fox[19] and reviewed research on the effects of exercise on self-esteem and demonstrated that there is an inconsistent association between physical activity and global self-esteem. Self-esteem is a stable construct and cannot be easily changed. A study[7] provided support for this view by demonstrating that increases in self-esteem are not maintained after the termination of an exercise-related intervention program. In a systematic review, it was also indicated that physical exercise has short-term benefits in terms of self-esteem among children and youth.[20] Moreover, self-esteem is a multifaceted construct and studies examining the link between exercise and self-esteem need to focus on the physical self rather than global self-esteem in order to establish significant associations with physical exercise. Thus, in line with the findings of the current study, it can be presumed that physical exercise influences one's physical self-perceptions and body image rather than global self-esteem.

There were significant correlations between total physical activity scores and self-esteem, and self-efficacy and body image but there was no correlation between total physical activity level and body image in males. The difference between female and male participants was thought to be associated with gender-based priorities. Contemporary Turkish culture and media overtly emphasize the need for women to look good and be thin but men are not a participant to such pressure. This double standard may have influenced our findings, leading to an insignificant association between physical activity and body image in male students. Similarly, Lowery et al.[21] found that women had a more negative body image compared to men albeit they consistently exercised. The study of Pauline et al.[22] in which they investigated the motivation and physical activity behaviors among college students, revealed that females were motivated for weight gain and physical appearance more, whereas males were motivated for performance-related matters like strength and endurance. In the current study, while there was a significant relationship between total physical activity level and body image in female students, the values of males did not show any relationship in this way and this was thought to be associated with gender based differences.

Limitations

Most previous studies made a distinction between global self-esteem and physical self-esteem. In the current study, a global measure rather than a physical measure of self-esteem was used. Further studies investigating the associations between exercise and physical self-esteem in Turkish college students are needed.

CONCLUSION

In the current study, the level of physical activity increased with age. This increased level of physical activity showed positive correlations with self-esteem, body image, and self-efficacy. There were significant relationships between exercise and self-esteem across the whole sample and male participants. In the current study, while there was a significant relationship between total physical activity level and body image in female students, the values of males did not show any relationship in this way and this was thought to be associated with gender-based differences.

ETHICAL DECLARATIONS

Ethics Committee Approval

permission of the İzmir University Faculty of Medicine Non-invasive Researches Ethics Committtee (Date: 17.12.2015, Decision No: 2015/49).

Informed Consent

All patients signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper and that they have approved the final version.

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